

REMARKS

Claims 1-28 are all the claims pending in the application. By this Amendment, Applicants add new claims 26-28. Claims 1, 11, and 13 are the only independent claims.

Allowable subject matter

Applicants thank the Examiner for indicating that claims 17, 18, 21-23, and 25 would be allowable if rewritten in independent form. However, Applicants respectfully request that the Examiner hold in abeyance such rewriting until the Examiner has had an opportunity to reconsider and withdraw the prior art rejection of the other claims.

Moreover, Applicants respectfully submit that since the Examiner acknowledges that claim 21 is allowable, claim 2 should similarly be indicated as allowable because it recites features similar to those recited in claim 21, as discussed in further detail below under the ‘Claim Rejections...’ section.

Claim Rejections – 35 U.S.C. § 103

Claims 1-7, 11-16, 19, 20, and 24 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 5,072,304 to Abe *et al.* (“Abe”) in view of U.S. Publication No. 2002/0092993 to Kanatake *et al.* (“Kanatake”). For *at least* the following reasons, Applicants respectfully traverse the rejection.

Applicants submit that claim 1 is patentable over the proposed combination of Abe and Kanatake. For example, claim 1 relates to an imaging head unit. The imaging head unit comprises, *inter alia*, a plurality of imaging heads arranged along a direction intersecting a predetermined scanning direction. The imaging heads move relative to a respective imaging surface in the scanning direction along the imaging surface. In the claimed imaging head unit,

pixel update timings of the imaging heads are alterable in at least the scanning direction for the individual imaging heads.

The Examiner contends that in col. 4, lines 18-24 of Abe, the detecting portion 14 comprising a group of photoelectric conversion elements discloses the claimed plurality of imaging heads, and that col. 2, line 65 to col. 3, line 4 of Abe discloses that the detecting portion 14 moves relative to the document S in the scanning direction along the document S. See FIG. 2 of Abe. The Examiner admits that Abe does not disclose that pixel update timings of the detecting portion 14 are alterable in at least the scanning direction for the individual photoelectric conversion elements. However, the Examiner alleges that Kanatake's scaling technique (page 6, paragraph [0086]) discloses this feature. Applicants respectfully submit that the combined teachings of Abe and Kanatake still do not disclose all the above-noted features of claim 1.

For instance, Kanatake discloses that in its scaling technique, a pixel element is scaled for projection onto a subject 42 (semiconductor wafer) by a pixel panel 38 (Kanatake, paragraphs [0025] and [0085]). The pixel elements of the pixel panel 38 correspond to a pixel pattern provided to the pixel panel 38 (Kanatake, paragraph [0005]). However, the time at which the pixel elements of the pixel panel 38 are updated is never altered in Kanatake. Rather, the pixel panel 38, as a unit is rotated in order to align it to a desired rotated focal point 242, and then aligned to a scaled focal point 234 by altering the scanning speed (Kanatake, paragraphs [0081], [0083], and [0091], along with FIGS. 17a and 17b). That is, the time at which the pixel pattern is provided to the pixel panel 38 is not alterable in Kanatake. Instead, the alignment processing is carried out subsequent to the pixel pattern being provided to the pixel panel 38. As such, Applicants submit that Kanatake does not disclose or suggest that pixel update timings of the

imaging heads are alterable in at least the scanning direction for the individual imaging heads, as required by claim 1.

Moreover, Applicants respectfully submit that Abe does not disclose that the imaging heads move relative to a respective imaging surface in the scanning direction along the imaging surface. As pointed out above, the Examiner alleges that the detecting portion 14 in Abe discloses the claimed imaging heads. However, the detecting portion 14 does not move relative to the document S (or the scale 15) in the scanning direction (shown as bi-directional arrow B/E in FIG. 2 of Abe). For example, the detecting portion is not secured to the rails 2, 2' which facilitate movement in the main scanning directions B/E.

The Examiner cites col. 2, line 65 to col. 3, line 4 of Abe as allegedly disclosing this feature. The cited portion describes FIG. 1, in which the image reading element 103 is driven in a scanning direction by the main scanning drive motor 101. However, this image reading element 103 corresponds to the reading head 1 of FIG. 2, and not the detecting portion 14. Further, as shown in FIG. 2, the reading head 1 is arranged parallel to the main scanning directions B/E, and not intersecting the main scanning directions B/E, as required by claim 1. Therefore, Abe fails to disclose imaging heads that are arranged along a direction intersecting a scanning direction, and that move relative to a respective imaging surface in the scanning direction along the imaging surface as set forth in claim 1.

In light of the discussion above, Applicants respectfully submit that claim 1 is patentable over the proposed combination of Abe and Kanatake. Accordingly, Applicants respectfully request the Examiner to withdraw the 35 U.S.C. § 103(a) rejection of claim 1.

Claims 2-7, 12, and 14 are patentable *at least* by virtue of their dependency on claim 1.

Applicants further submit that claims 2 and 14 are patentable for reasons other than their dependency.

For example, claim 2 recites that each imaging head comprises a plurality of imaging elements, and the alteration of a pixel update timing is implemented by altering an imaging timing by a duration which is determined by a ratio between a spacing error of an imaging element in the scanning direction and a scanning speed. The Examiner again cites paragraph [0086] of Kanatake to disclose this feature. Applicants respectfully disagree.

Applicants point out that the above-noted features of claim 2 are similar to those recited in claim 21, which the Examiner acknowledges recites allowable subject matter. As such, Applicants respectfully request the Examiner to indicate claim 2 as allowable also.

Claim 14 recites that the pixel update timings are timings at which the imaging heads are updated with image data from a memory of the imaging head unit. The Examiner contends that paragraph [0073] of Kanatake, where it is generally disclosed that “[t]he computer system 36 can keep track of all the data provided to each pixel panel to accommodate the entire scanning procedure” discloses this feature. Applicants respectfully disagree.

Referring back to claim 1, from which claim 14 depends, the **timings** set forth in claim 14 are **alterable**. Here, in Kanatake, there is no disclosure or suggestion that the timings of providing a pixel pattern to the pixel panel 38 are alterable. For instance, Kanatake discloses that the pixel pattern provided to the pixel panel 38 may be relocated, but the timing at which the pixel elements are relocated are not alterable (for example, see paragraph [0083] of Kanatake). Therefore, claim 14 is patentable over the combined teachings of Abe and Kanatake.

Claim 11 recites an imaging device comprising, *inter alia*, an imaging head unit including a plurality of imaging heads, and *pixel update timings of the imaging heads are alterable* in at least the scanning direction for the individual imaging heads. Therefore, Applicants respectfully submit that claim 11 is patentable for *at least* reasons similar to those given above with respect to claim 1.

Since claim 15 depends from claim 11, it is patentable *at least* by virtue of its dependency.

Claim 13 recites an imaging method which employs an imaging head unit, the method comprising, *inter alia*, *altering pixel update timings* for individual imaging heads. Therefore, Applicants respectfully submit that claim 13 is patentable for *at least* reasons similar to those given above with respect to claim 1.

Since claims 16, 19, 20, and 24 depend from claim 13, they are patentable *at least* by virtue of their dependency.

Claim 8

Claim 8 is rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Abe in view of Kanatake, and further in view of U.S. Patent No. 5,993,183 to Enomoto *et al.* (“Enomoto”). For *at least* the following reasons, Applicants respectfully traverse the rejection.

Claim 8 depends from claim 1. Since Enomoto does not cure the deficient teachings of Abe and Kanatake with respect to claim 1, Applicants submit that claim 8 is patentable *at least* by virtue of its dependency.

Claim 9

Claim 9 is rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over the combination of Abe, Kanatake, and Enomoto, and further in view of U.S. Patent No. 6,900,825 to Kito (“Kito”). For *at least* the following reasons, Applicants respectfully traverse the rejection.

Claim 9 depends from claim 1. Since Kito does not cure the deficient teachings of Abe and Kanatake with respect to claim 1, Applicants submit that claim 9 is patentable *at least* by virtue of its dependency.

Claim 10

Claim 10 is rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over the combination of Abe, Kanatake, Enomoto, and Kito and further in view of U.S. Patent No. 6,133,986 to Johnson (“Johnson”)¹. For *at least* the following reasons, Applicants respectfully traverse the rejection.

Claim 10 depends from claim 1. Since Johnson does not cure the deficient teachings of Abe and Kanatake with respect to claim 1, Applicants submit that claim 10 is patentable *at least* by virtue of its dependency.

New Claims

Applicants respectfully submit that claims 26-28 are patentable *at least* by virtue of their dependency. Moreover, the prior art of record does not disclose or suggest that pixel update timings of each individual imaging head among the plurality of the imaging heads are alterable

¹ Applicants point out that in the rejection of claim 10 on page 27 of the Office Action, the Examiner incorrectly cites Bromley in the statement of rejection instead of Kanatake.

independent of the pixel update timings of the other imaging heads among the plurality of the imaging heads, as set forth in some variation in claims 26-28.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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